



Development of the DPR algorithms for GPM science construction

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The Global Precipitation Measurement (GPM) mission is an international satellite mission for understanding the distribution of global precipitation. It started as a follow-on and expanded mission of the Tropical Rainfall Measuring Mission (TRMM) project. The three-dimensional measurement of precipitation will be achieved by the Dual-frequency Precipitation Radar (DPR) aboard the GPM core-satellite. The DPR, which is being developed by Japan Aerospace Exploration Agency (JAXA) and National Institute of Information and Communications Technology (NICT), consists of two radars; Ku-band precipitation radar at 13.6GHz (KuPR) and Ka-band radar at 35.55GHz (KaPR). The DPR is expected to advance precipitation science by expanding the coverage of observations to higher latitudes than those of the TRMM PR, measuring snow and light rain by the KaPR, and providing drop size distribution information based on the differential attenuation of echoes at two frequencies. Because the GPM core satellite, similar to the TRMM, is in a sun non-synchronous orbit, we can derive information on diurnal cycle of the precipitation over the mid-latitudes in addition to the Tropics. JAXA will promote and contribute to this advance of science by the development of the DPR algorithms. We are developing synthetic DPR Level 1 data from experimental data of the TRMM PR. Moreover, we are trying to validate the algorithms physically by using data sets synthesized from a cloud resolving model by the Japan Meteorological Agency and the satellite radar simulation algorithm by the NICT.